

CLAIMS

1 Closing device for doors, hoods, or hatches, especially of motor vehicles,

-- with a grip flap (12), pivotably supported (11) in a grip housing (10), which flap is held by a restoring force (38) in a rest position (12.1) in the housing (10) and is manually actuated (37) to move it into its working position (12.2), and

-- with an electric switch (20), which has a spring-loaded (28) contact actuator (24),

-- the contact actuator (24), upon actuation (37) of the grip flap (12), is moved against its spring-loading (28) from a starting position (24.1) determining a first contact position into an actuating position (24.2) determining a second contact position,

characterized in that the restoring force (38) for the grip flap (12) is produced by the spring-loading (28) of the contact actuator (24) in the electric switch (20).

2. Closing device according to Claim 1, characterized in that the electric switch (20) is located in the interior of the grip housing (10), and in that the contact actuator (24) acts directly on the grip flap (12).

3. Closing device according to Claim 1, characterized in that the electric switch (20) is located on the outside of the grip housing (10), and in that the contact actuator (24) acts directly on the grip flap (12).

4. Closing device according to Claim 2 or Claim 3, characterized in that an elastic element is located between the contact actuator (24) and the grip flap (12), which elastic element transmits the actuating force (45) and is capable of undergoing deformation (49) when doing so.

5. Closing device according to Claim 4, characterized in that the elastic element (48) consists of a spring element.

6. Closing device according to one of Claims 1-5, characterized in that the contact actuator (24) consists of a plunger, which is spring-loaded (28) in the outward-travel direction and points toward the bottom surface (13) of the grip flap (12).

7. Closing device according to Claims 4 and 6, characterized in that the plunger consists of elastomeric material and simultaneously assumes the function of the elastic element (48) during transmission of the actuating force (45).

8. Closing device according to one of Claims 1-7, characterized in that the grip housing (10) has an opening (15), through which an electric cable (40) can pass, the conductors

(41, 42) of which proceed into the switch housing (23), where they are connected to the electric contacts (21, 22).

9. Closing device according to one of Claims 1-8, characterized in that the grip housing (10) consists of a shell, which is open toward the bottom surface (13) of the grip flap (12), in which shell the switch housing (23) and possibly a mounting aid (30) are provided.

10. Closing device according to one of Claims 1-9, characterized in that the spring-loading (28) of the plunger (24) consists of a curved diaphragm spring (27), the periphery of which is attached to the switch housing (23), and in that, when the device is in the starting position (24.1) the curvature of the diaphragm (27) is directed away from the stationary contacts (21, 22).

11. Device according to Claim 10, characterized in that, to increase the restoring force (38) acting on the grip flap (12), the diaphragm spring (27) can be designed to consist of several layers.

12. Closing device according to one of Claims 1-11, characterized in that the electric switch (20) is held in place in a mounting shell (30), and in that, when the mounting shell (30) is installed, it latches into position in the grip housing (10).

13. Closing device according to one of Claims 1-12, characterized in that an elevation (43), which serves as a stop for the grip flap (12), is provided on the mounting shell (30) or on the housing (10).

14. Closing device according to Claim 12 or Claim 13 with a strain-relief device for the electric cable (40) assigned to the electric switch (20), characterized in that the strain-relief device (31, 32) is integrated into the mounting shell (30).

15. Closing device according to Claim 14, characterized in that the strain-relief device (31, 32) consists of a labyrinthine guide for the electrical conductors (41, 42), this guide being an integral part of the mounting shell (30).

16. Closing device according to Claim 15, characterized in that the strain-relief device consists of two pins (31, 32), seated in the interior of the shell (33), around which the electrical conductors (41, 42) of the cable (40) pass in the form of an "S".

17. Closing device according to one of Claims 12-16, characterized in that the mounting shell (30) is filled with a casting compound, which at least partially covers the electrical switch (20) and/or the electrical conductors (21, 22).

18. Closing device according to Claim 17, characterized in that the casting compound serves to hold the switch housing (23) permanently in position in the mounting shell (30).

19. Closing device according to one of Claims 1-18, characterized in that the mounting shell (30), the switch (20) mounted in it together with the restoring force (38) acting on the grip flap (12), and the cable (40) seated in the strain-relief device (31, 32) form a structural unit (44) which can be preassembled, and in that the structural unit (44) can first be assembled, then inserted (34) into the housing (10), and finally fixed in place therein (10).